

REMARKS

Basis for the foregoing amendments can be found at page 11, line 30; page 12, lines 12-17; page 18, lines numbered 5-17; and the discussion at, *inter alia*, page 7, line 34 to page 9, line 27.

The aqueous, energy-curable, printing ink composition of the present invention comprises a metallic colorant and an energy-curable vehicle which is a homogeneous, aqueous solution of water, water soluble ethylenically unsaturated resin containing neutralized acidic or basic functional groups, and preferably a water-soluble or partially water-soluble oligomer, and optionally, a water-insoluble ethylenically unsaturated oligomer. The printing ink compositions are single phase aqueous compositions which do not require drying prior to curing, allow hydrophobic pigments to disperse well by containing both hydrophilic and hydrophobic components, contain highly functional polymers and possibly oligomers, provide good control of viscosity without compromising cure speed, and cure to the print with good adhesion and water resistance. See, e.g., page 4, lines 14-22.

One feature which distinguishes the invention from the references cited in the Office Action is the employment of a surface active resin. As noted on page 12 of the application, this material permits dissolution of other materials so that a single phase composition is achieved. It is respectfully submitted that the claimed composition is not anticipated or rendered obvious by the cited references.

Claims 6-8, 14 and 15 were rejected under 35 U.S.C. 102 over Noguchi. This rejection is respectfully traversed. There is, *inter alia*, no teaching or suggestion in this reference of the use of a surface active resin. Accordingly, the anticipation rejection is

not tenable and as acknowledged in the latter part of the Office Action, no basis for an obviousness rejection based on this reference alone.

Claims 1-15 were rejected under 35 U.S.C. 103 over Laskin in view of Tanaka. This rejection is also respectfully traversed. Laskin does not, *inter alia*, teach or suggest the use of a water soluble surface active ethylenically unsaturated resin containing neutralized acidic or basic functional groups. It also does not teach or suggest the use of a metallic pigment as acknowledged in the Office Action. It is respectfully submitted that the reliance on Tanaka for the latter feature of the invention is misplaced.

Tanaka relates to a radiation curable ink composition which has a vehicle having an acid value of 5 to 100 and contains a linear polyester oligomer, an unsaturated carboxylic acid or ester or amine thereof, a multiply unsaturated polycarboxylic ester having a plurality of acid groups, an unsaturated fluorinated carboxylic acid or block copolymer thereof, a multiply unsaturated carboxylic acid free of acid groups and at least one single double bond containing carboxylic acid and/or amide free of an acid group. This composition can contain either an organic or inorganic pigment which is selected to be "harmless" depending on the desired end use of the composition. There is nothing in this reference which indicates that metallic pigments are equivalent to and interchangeable with non-metallic pigments. Indeed, there is nothing in this reference which teaches or suggests that a metallic pigment can be used in all energy curable compositions. The fact that a variety of pigments may be found in a list and might have a known relationship does not mean they are equivalent and interchangeable. *In re Grasselli*, 218 USPQ 769 (Fed. Cir. 1983) (known relationship of lithium to sodium and potassium as Group IA elements is not sufficient, in and of itself, to treat them as interchangeable).

The rejection of claims 6-8, 14 and 15 under 35 U.S.C. 103 over Gummeson in view of Tanaka is respectfully traversed.

Gummeson suffers from the same deficiencies as Laskin and, *inter alia*, does not teach or suggest the use of a water soluble ethylenically unsaturated resin containing neutralized acidic or basic functional groups which is a surface active material chemically incorporating hydrophilic and hydrophobic structures. It also does not, as acknowledged in the Office Action, teach or suggest the use of a metallic pigment. The reliance on Tanaka for the latter feature has been shown to be inappropriate above.

Claims 1-15 were rejected under 35 U.S.C. 103 over WO '369 in view of Thanawalla and Tanaka. This rejection is respectfully traversed.

WO '369 discloses an aqueous polymer dispersion for coating and printing inks containing a polymer which is substantially free of cationic polymerizable functionalities, soluble or dispersible in a basic aqueous solution, and an acid generating photoinitiator and precipitates out of the solution upon exposure to radiation. No surface active resin is suggested. It does refer to Thanawalla with regard to possible diluents but the latter reference simply indicates that a reactive diluent can comprise one or more free radical polymerizable, radiation curable, substantially nonvolatile liquid monomers or oligomers. No disclosure of the alleged combination of water soluble and water insoluble oligomers has been found in Thanawalla and indeed, no reference to the solubility of any oligomer has been noted.

WO '369 does not teach or suggest the use of a metallic pigment and it has been shown above that Tanaka can be properly relied upon to show that feature of the invention.

Claims 1, 2, 6, 7, 9 and 14 were rejected under 35 U.S.C. 103 over Phillips and, although not stated in the first two lines of paragraph 8 of the Office Action, Tanaka.

Phillips relates to radiation curable water dilutable polyester acrylates. It is not seen where this reference teaches the combination of an ethylenically unsaturated oligomer and an ethylenically unsaturated resin having neutralized functional groups. The second full paragraph in the third column on the first page of this reference indicates that it is the oligomer whose acidic groups which were neutralized. Moreover, Phillips does not teach or suggest a water soluble ethylenically unsaturated resin containing neutralized acidic or basic functional groups which is a surface active material chemically incorporating hydrophilic and hydrophobic structures. Phillips also does not teach or suggest a metallic pigment and the inappropriateness of the reliance on Tanaka for such a showing has been discussed above.

Claims 1-5, 9 and 11-13 were rejected under 35 U.S.C. 103 over Noguchi in view of Figov. This rejection is respectfully traversed.

The applicability of Noguchi has been discussed above. As pointed out, it does not teach or suggest a water soluble ethylenically unsaturated resin containing neutralized acidic or basic functional groups which is a surface active material chemically incorporating hydrophilic and hydrophobic structures. It also does not, as acknowledged in the Office Action, teach or suggest the ethylenically unsaturated oligomer. The Figov patent does not cure the latter deficiency.

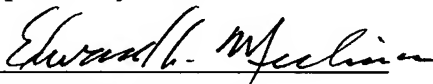
Figov relates to an ink jet ink composition containing a mixture of water, water miscible polymerizable material, colorant and photoinitiator. The polymerizable material may be formed of an oligomer, such as an acrylic oligomer. Such oligomers need not be ethylenically unsaturated and they may or may not be water soluble

(column 3, lines 39-41). There is no motivation to select an ethylenically unsaturated oligomer and use it in such a way to form a homogeneous, single phase aqueous solution as set forth in the instant claims.

In light of all of the foregoing, it is respectfully submitted that all of the prior art rejections in this case should be withdrawn.

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Respectfully submitted,

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